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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,117	02/01/2002	Thomas Hoffer	P/2107-186	9525
2352	7590	05/19/2004	EXAMINER	
OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			TSANG FOSTER, SUSY N	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,117	HOFER ET AL.	
	Examiner	Art Unit	
	Susy N Tsang-Foster	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20010906</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed on 6 September 2001 has been considered by the Examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: The reference sign "54" does not appear to be in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

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On page 6, in the second paragraph, it is unclear to the examiner how a bundle having a diameter of 0.1 to 2 mm can have a braid thickness of 0.02 to 0.4 mm where the endpoint diameter of 2 mm would be greater than the braid thickness endpoint of 0.4 mm..

On page 12, line 2, the word “hydrophobing” does not appear to be in the English language dictionary and it appears that applicant means “hydrophobic”. The word “hydrophobing” also appears on pages 21 and 22 of the specification.

Appropriate correction is required.

Oath/Declaration

5. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The second inventor did not give the date of execution of oath.

Claim Interpretation

6. It is noted that a majority of the claims contain a broad limitation followed by a narrower limitation prefaced by the word “preferably”. For all the pending claims, the Examiner gives the claim the broadest reasonable interpretation in light of the specification and claims reciting embodiments prefaced by the word “preferably” is not given patentable weight in the claims. For example, in claim 20, the limitation “a frame, which is preferably of cylindrical design”

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reads on any frame and the cylindrical design embodiment is not given patentable weight. As another example, in claim 29, in the limitation “then a further braid of bundles and/or filaments or fibers of an electron-conducting material then being applied to the outwardly oriented catalyst layer, preferably by braiding carbon-fiber bundles and/or metal wires”, the preferred embodiment “by braiding carbon-fiber bundles and/or metal wires” is not given patentable weight and the limitation is given its broadest reasonable interpretation and is interpreted as a braid of electron-conducting material.

Claim Objections

7. Claim 6 is objected to because of the following informalities: In claim 6, the word “hydrophobing” does not appear to be in the English language dictionary and it appears that applicant means “hydrophobic”. Appropriate correction is required.
8. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In claim 3, the limitation “the more than one metal wires (21) are in the form of a stranded conductor” does not limit claim 2 because it does not actually require claim 2 to have more than one metal wires in the lumen.
9. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In claim 10, the limitation “in which the spacer (13,15) is designed

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as a braid of electrically insulating or ion-conducting fibers” does not appear to further limit claim 8 which is drawn to “an ion conductive or neutral spacer” because a braid of electrically insulating fibers would not be an ion conductive spacer and a braid of ion-conducting fibers would not be a neutral spacer.

10. Claims 18 and 20 are objected to because of the following informalities:

In claim 18, the use of the trademark “NAFION” is indefinite because trademark compositions may vary over time. It is advised to the applicant to replace the trademark name with the generic terminology.

In claim 20, the limitation “containing at least on module” should be “containing at least one module.”

Appropriate correction is required.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

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art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the limitations “a braid (3) of bundles and/or filaments or fibers of an electron-conducting material” and “braiding of the bundles and/or filaments or fibers to form a hose” do not appear to be in the original disclosure. Instead, the original disclosure (see page 4 of the specification) states “a tubular braid of bundles and/or filaments of an electron conducting material”. It is noted that present claim 1 is an amended claim during the international stage of the application and it appears that the limitations recited above are not in the original claims or specification.

Page 10 of the original specification also states “a braid of bundles and/or filaments of an electron-conducting material”.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

13. Claims 1-33 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a braid of bundles of carbon fibers and/or metal wires of an electron conducting material, does not reasonably provide enablement for all electron conducting materials. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The specification only discloses carbon fibers and metal wires as the only electron-conducting materials that can be braided. It would be undue experimentation to one of ordinary

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skill in the art to determine what other electron-conducting material can be braided that would be encompassed by applicant's claimed invention.

14. Claim 30 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for polyvinyl alcohol as a material which can easily be washed out, does not reasonably provide enablement for all materials which can be easily washed out. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification and claims only disclose polyvinyl alcohol as a material which can be easily washed out. It would be undue experimentation to one of ordinary skill in the art to determine what other materials can be easily washed out that would be encompassed by applicant's claimed invention.

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In general, all the claims are replete with problems of indefiniteness and it is unclear to the Examiner what applicant is intending to claim as his invention.

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In claim 1, the limitation “a braid (3) of bundles and/or filaments or fibers of an electron-conducting material” is indefinite because it is unclear what the bundles are and what the scope of the limitation is due to the confusing nature of multiple uses of the word “or” in the limitation. For example, does the limitation encompass the following alternatives? The first alternative is “a braid (3) of bundles and filaments or fibers of an electron-conducting material” which would be only two components making up the braid, either bundles and filaments or bundles and fibers. The second alternative of the limitation is “a braid (3) of bundles or filaments or fibers of an electron-conducting material” which would have only one component (either the bundles, the filaments, or fibers) making up the braid. It is noted that other claims containing these specific limitations are also indefinite for the same reason.

In claim 1, the limitation “braiding of the bundles and/or filaments or fibers to form a hose comprising a braid of this electron-conducting material” is indefinite for similar reasons given above.

In claims 1 and 29, the limitation “and, if appropriate” is indefinite because it is unclear under what conditions it is appropriate for drying.

In claims 1-33, it is unclear to the Examiner what makes up the bundles.

In claims 4 and 5, the limitation “in each case” is indefinite because it is unclear what case this limitation is referring to.

In claim 5, the limitation “if appropriate together with charcoal, soot or graphite” is indefinite because it is unclear under what conditions it would be appropriate.

In claim 5, the limitation “subgroup VIII of the periodic system of the elements” is unclear. It appears applicant means “subgroup VIII of the periodic table of the elements”.

The Examiner is interpreting subgroup VIII of the periodic table of the elements to be selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, and Pt in view of the conventional periodic table of the elements.

In claim 8, the limitation “neutral spacer” is indefinite because it is unclear what neutral means. It appears from the specification that the word “neutral” means electrically insulating.

In claim 10, the limitation “the spacer (13, 15)” is indefinite because it is unclear which spacer the claim is referring to since claim 8 from which it depends recites an ion-conductive or neutral spacer.

In claim 11, the limitation “the electron-conducting material is an electron-conducting woven support, in particular an electrode” is indefinite because it is unclear to the Examiner what is meant by “in particular an electrode” and what kind of electrode this is. For example, is it an electrode of an electrochemical device or an electrode which acts only as a conductor and does not participate in any electrochemical reaction?

In claim 13, the limitation “substantially comprise metal” is indefinite because it is unclear what amount “substantially” encompasses and one of ordinary skill in the art would not know what is meant by “substantially comprise metal”.

Claim 14 recites the limitation “the metal” in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the carbon fibers" in line 1. There is insufficient antecedent basis for this limitation in the claim.

In claim 18, the limitations "other anionic polyaryl ethers" and "other sulfonated perfluorinated polymers" are indefinite because it is unclear what other anionic polyaryl ethers are meant by applicant or what other sulfonated perfluorinated polymers are meant by applicant.

In claim 22, the limitation "in which the braid (11,17) which faces the surface of the tubular composite (1)" is indefinite because it is unclear what surface of the tubular composite is meant since a tubular composite would have an inner surface and an outer surface.

In claim 28, the limitation "in particular as claimed in claim 1" is indefinite because it is unclear whether claim 28 is required to depend from claim 1.

In claim 29, the limitation "in each case" is indefinite because it is unclear what case is being referred to.

In claim 29, the limitation "if appropriate" is indefinite because it is unclear under what conditions it would be appropriate for drying.

In claim 30, the limitation "followed by an intermediate layer of a material which can be easily be washed out" is indefinite because it is unclear what material would be easily be washed out and how that degree of facileness in which the material is removed is determined and it is also unclear how the material is washed out. For example, is organic or aqueous solvent used to wash out the material?

In claim 33, the limitation "the intermediate layer made from a material which can be easily be washed out" is indefinite because it is unclear what material would be easily be washed out and how that degree of facileness in which the material is removed is determined and it is

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also unclear how the material is washed out. For example, is organic or aqueous solvent used to wash out the material?

Claim 31 recites the limitation "the intermediate layer" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 33 recites the limitation "the intermediate layer" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 33 recites the limitation "the individual hollow fibers" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. As best understood, claims 1-11, 13, 14, and 17-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Dodge (US 5,458,989).

Dodge discloses a tubular composite comprising a braid of metal wires (which are filaments) and a layer of ion-conducting material arranged above it (see Figures 33a-33f; col. 32, line 51 to col. 35, line 48). See especially Figure 33 (f) reproduced below:

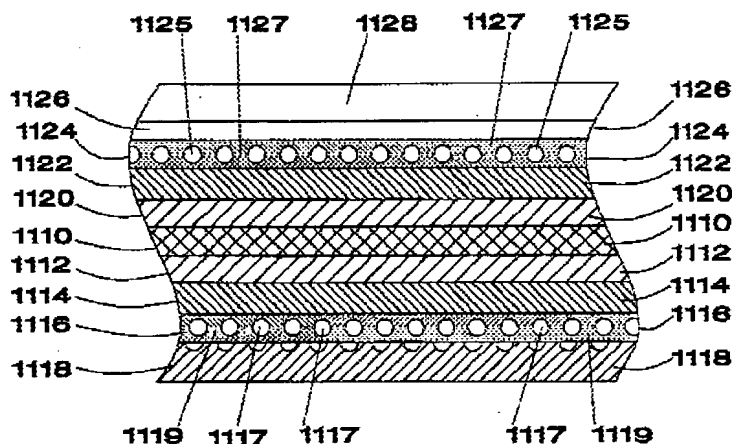


Figure 33 (f)

Figure 33(f) shows a polymer exchange membrane electrolytic member 1110 (which is an ion-conducting material) is disposed as the central layer of the tubular composite, an anode catalyst layer 1112, an anode gas diffusion layer 1114, an anode collection layer 1116, a cathode layer 1120, a cathode diffusion layer 1122, a cathode collector 1124, and outer housing member 1128 (col. 33, lines 9-22). The center of the tubular composite is by definition the lumen.

The current collectors 1116 and 1124 can be in the form of braided metal wires in tubular form (col. 34, lines 16-20). The braided metal wires form an electron-conducting woven support. The current collectors collect electrical current from the tubular composite such that it would be in electrical conductive contact with an electron-conducting device to which the tubular

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composite designed as a fuel cell is connected to provide power. Hydrogen contacting structure should be a high grade stainless steel (col. 24, lines 5-10).

The porous catalyst layers 1112 and 1120 are preferably thin coatings and provide a distinct gas-dissociation stage in intimate contact with electrolytic member 1110 (the ionic conducting material; see col. 33, lines 33-38). The porous catalyst layers comprise a finely divided catalyst, such as platinum in a conductive medium such as carbon black (col. 33, lines 23-44). Typically, catalyst layers also contain TEFLON, which is polytetrafluoroethylene (PTFE) and hydrophobic, serving as a binder for the platinum particles and as a hydrophobic agent to prevent the accumulation of water in the catalyst layer (col. 7, lines 45-50).

Alternatively, to enhance conductivity and reduce resistance in every feature of the fuel cells' electrical construction, the catalyst layer can also comprise platinum and a conductive proton-exchange polymer (col. 22, lines 35-58). In the case where the catalyst layer comprises a conductive proton-exchange membrane, it would function as an ion-conductive spacer between the first braided current collector (innermost tubular component) and the ion-conducting material of the electrolytic membrane and the second catalyst layer comprising a conductive proton-exchange membrane would function as an ion-conductive spacer between the outermost braided current collector and the ion-conducting material of the electrolytic membrane.

Since the components making up the tubular composite are porous, the tubular composite can function as an ion exchange membrane.

The tubular composites can be in the form of multiple fuel cells that are disposed freely in a variety of configurations, including in a side-by-side manner, enabling the peripheries of

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individual cells to be separately sealed by members or sealants that are not subjected to swelling forces generated in the ion-exchange electrolytic membrane (col. 36, lines 9-19).

As seen in Figure 33a, current collectors 1116 and 1124 can be easily connected by suitable electrical conductors.

For example, Figure 14 shows an array of tubular fuel cells mounted in a housing (a module) where busbars run between rows of connectors and the orientation of the adjacent cells will determine whether they are connected in series for voltage or in parallel for current (col. 15, lines 54-66). This flexibility of connections permits an array (module) readily to be adapted for diverse applications and the busbar electric pickup is very simple and can be readily adapted to many other configurations and is suitable for extension to large and very large arrays with mixed series-parallel connections for balanced power output is possible (col. 15, line 65 to col. 16, line 6). There is no particular limit to the number of cells in an array and equally there can be many more than two rows and other housing structures would be apparent (col. 16, lines 22-25).

19. Claims 1-14, and 16-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by WO 97/47052.

See Figures 1-4E; page 3, line 14 to page 4, line 5; page 5, lines 1-23; page 6, line 5 to page 7, line 20; page 8, lines 1-12; page 9, lines 10-22; Example 3; Page 11, lines 10-15; and Examples 1, 4, and 6 of the reference.

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20. Claims 1-14, and 16-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by WO 98/16963.

See Figures 1-3; page 6, lines 8-33; page 8, lines 4-20 of the reference.

21. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the EPO English Abstract for DE19539257.

See abstract of reference.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. As best understood, claims 1-12, and 17-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dodge (US 5,458,989).

The product-by-process limitations of claim 1 is not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Specifically, in claim 1, the process limitation “the tubular composite being produced by braiding of the bundles and/or filaments or fibers to form a hose comprising a braid of this electron-conducting material and subsequent application of the ion-conducting material to the outer side, which is remote from the lumen of the hose, of the braid and, if appropriate, drying” is not given patentable weight in a product claim.

Dodge discloses a tubular composite 512 comprising a braid of carbon fibers (woven carbon cloth) and a layer of ion-conducting material arranged above it (see Figure 13 and col. 36, lines 32-52). See especially Figure 13 reproduced below:

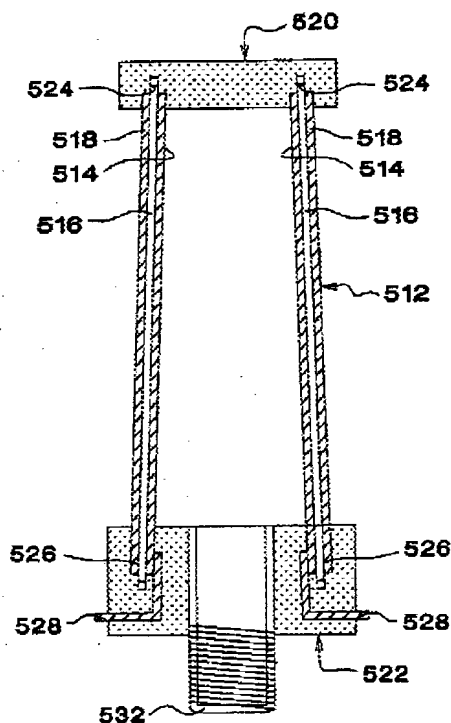


Fig. 13

Figure 13 shows inner anode 514, outer cathode 518, and electrolyte membrane 516 (col. 11, lines 17-32). Another embodiment of Figure 13 employs a plurality of tubular member composites 512, for example from two to ten members with alternating anode-cathode dispositions in a radial direction and suitable spacing between members such as inactive insulative supports (col. 12, lines 3-9). The resultant array of nested sleeves is adapted to supply hydrogen to alternate spaces between anodes, in a non-leaking manner (col. 12, lines 9-10).

The tubular fuel cells can be connected either in series or in parallel, depending upon whether the voltage or current capacity is desired (col. 13, lines 5-10). Each of the electrode 514 and 518 is self supporting and substantially rigid and deposits of platinum catalysts deposited on the appropriate electrode surface in the vicinity of the surfaces mating with the electrolyte membrane (col. 13, lines 10-26). Where the concentric tubular members comprise carbon fibers, derived for example from woven carbon cloth, exceptional tensile strength and conductivity is provided in a light weight structure (col. 36, lines 32-52).

Typically, catalyst layers also contain TEFLON, which is polytetrafluoroethylene (PTFE) and hydrophobic, serving as a binder for the platinum particles and as a hydrophobic agent to prevent the accumulation of water in the catalyst layer (col. 7, lines 45-50). Alternatively, to enhance conductivity and reduce resistance in every feature of the fuel cells' electrical construction, the catalyst layer can also comprise platinum and a conductive proton-exchange polymer (col. 22, lines 35-58). In the case where the catalyst layer comprises a conductive proton-exchange membrane, it would function as an ion-conductive spacer between the first woven carbon support (innermost tubular component) and the ion-conducting material of the electrolytic membrane and the second catalyst layer comprising a conductive proton-exchange

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membrane would function as an ion-conductive spacer between the cathode (the outer woven carbon support) and the ion-conducting material of the electrolytic membrane.

Since the components making up the tubular composite are porous, the tubular composite can function as an ion exchange membrane.

The woven carbon cloth in each of the electrodes of the tubular composite which is electrically conductive would be in electrical conductive contact with an electron-conducting device to which the tubular composite designed as a fuel cell is connected to provide power. As seen in Figure 13, a metal conductor 528 is in contact with the lumen of the tubular composite (col. 12, lines 52-67). Electricity is tapped from connectors 528-530 as seen in Figure 14.

Figure 14 shows an array of tubular fuel cells mounted in a housing (a module) where busbars run between rows of connectors and the orientation of the adjacent cells will determine whether they are connected in series for voltage or in parallel for current (col. 15, lines 54-66). This flexibility of connections permits an array (module) readily to be adapted for diverse applications and the busbar electric pickup is very simple and can be readily adapted to many other configurations and is suitable for extension to large and very large arrays with mixed series-parallel connections for balanced power output is possible (col. 15, line 65 to col. 16, line 6). There is no particular limit to the number of cells in an array and equally there can be many more than two rows and other housing structures would be apparent (col. 16, lines 22-25).

Conclusion

24. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/ *Susy Tsang Foster*

Susy Tsang-Foster
Primary Examiner
Art Unit 1745